

XXXI.—*Brief Descriptions of new Thysanoptera*.—III. By RICHARD S. BAGNALL, F.L.S., F.E.S. (Hope Department of Zoology, University Museum, Oxford).

Suborder TEREBRANTIA.

Family *Æolothripidæ*.

Orothrips australis, sp. n.

Colour dark grey-brown; hind legs, including tarsus, unicolorous with body (other legs absent in the type specimen). Mouth-cone rather long, reaching across prosternum; maxillary palpus 7-jointed; labial 3 (?) -jointed. Antennæ dark grey-brown, apex of joint 2 and whole of 3 excepting distal third yellowish-white, extreme base of 4 yellowish-brown; relative lengths of joints approximately:—32 : 60 : 104 : 82 : 52 : 32 : 19 : 12 — joint 3 pedicellate. Very narrow, wavy, elongated, membranous sense-areas in 3 and 4; a short, straight, but otherwise similar area in 4; and a minute sense-cone on each of the joints 5, 6, and 7.

Fore-wings longer and narrower than in *kelloggii*, Moulton, clear white with extreme base and a band across tip dark brown, and a similar but more extensive dark band across middle; setæ along costa and the longitudinal veins minute; cilia of hind fringe up to more than 2.5 times as long as the greatest breadth of wing. All cross-veins included well within the central dark area. Hind-wings with light grey patches corresponding with the dark areas of fore-wings.

Abdominal segment 8 without the pair of stout spines described in *kelloggii*, 9 and 10 with moderately long bristles; tergite 9 about twice as long as 10.

Differs from *O. kelloggii*, Moulton, in the colour and relative lengths of the antennal joints, the longer mouth-cone, and fewer (?) joints in labial palpi; the longer, narrower fore-wings with more extensive dark central area, more minute setæ, and longer cilia; and the lightly banded hind wings.

Moulton says that the labial palpi of *O. kelloggii* are 4-jointed in his key to genera, but 5-jointed in describing the genus and species.

Type. In Hope Collections, University Museum, Oxford.

Hab. AUSTRALIA: one ♀ collected by Mr. A. Eland Shaw from the flowers of a native shrub, *Xanthorrhœa australis*, Healesville, Victoria, Oct. 12, 1913.

Family Thripidæ.

Thrips japonicus, sp. n.

A very distinct species.

♀.—Length about 1·4, breadth of mesothorax 0·3 mm.

Colour yellow, lightly tinged with grey, legs lighter and thorax orange-yellow; setæ dark. Abdominal segments 9 and 10 entirely dark grey-brown, almost black, and all *tergites* lighter or darker grey-brown. Antennal joints 1 and 3 dirty yellowish-white, 2 orange-yellow, 4–7 dark grey-brown, 5 in some specimens more or less yellowish basally. Fore-wings and cilia grey, lighter basally.

Head about 0·75 as long as broad and 0·8 as long as the prothorax; eyes coarsely faceted, pilose, black. Relative lengths of antennal joints 2–7 as follows:—24 : 34 : 32 : 22 : 31 : 7 — 3 pedicellate, and 3 and 4 fusiform.

Prothorax about 1·5 times as broad as long, surface sparsely setose; bristles at posterior angles about 0·4 the length of prothorax. Wings reaching to about the ninth abdominal segment, upper vein of fore-wing with 3 (approximately 1+1+1) setæ in the distal half.

Abdomen elongated, no broader than pterothorax, with segments 9 and 10 sharply narrowed to tip; 10 divided above.

Type. In Hope Collections, University Museum, Oxford.

Hab. Kobe, Japan, not uncommon, Nov. 1913 (*J. E. A. Lewis*).

Suborder TUBULIFERA.

Family Idolothripidæ.

Dicaiothrips stenocephalus, sp. n.

♂.—Length 4·7, breadth of mesothorax 0·72 mm.

Dark brown, including all femora, tibiæ, and tarsi (excepting the fore-tarsi, which are yellowish). Antennal joint 3 light lemon-yellow, brown at apex; basal half of 4, except a narrow ring at extreme base, light yellow, and basal third of 5 yellowish-brown.

Head exceptionally long and slender, 3·3 times as long as broad at broadest; vertex produced; eyes occupying less than 0·2 the length of head; postocular and antecular bristles long. Antennæ 1·4 times as long as the head, relative lengths of joints 3–8 approximately:—67 : 59 : 50 : 35 : 23 : 22. Mouth-cone very small and short.

Prothorax about 0·4 the length of head. Fore-femur

stout, a basal series of very stout dark spines on outer margin in addition to the usual bristles, and a yellow sickle-formed bristle at apex; fore-tibia very short and stout; tarsal tooth rather short.

Tube 0.68 as long as the head, slender; terminal hairs colourless, 0.65 the length of tube and those on tergite 9 not quite as long as tube.

Recognized by the long and slender head.

Hab. GERMAN EAST AFRICA: Moschi, 1 ♂ collected by Mr. C. Katona, Aug. 15, 1905 (National Hungarian Museum).

Dicaiothrips proximus, sp. n.

♂. Near *malayensis*, Bagn., a little longer and much stouter. Anterior femora very greatly enlarged, with a brown sickle-shaped bristle at apex. Head with vertex less noticeably prolonged; postocular bristles present. Antennal joints 3 and 4 subequal; 4 with basal third, and 5 basally yellowish. Prothorax much larger than in *malayensis*, not quite 0.5 the length of the head; disc sloping from basal margin, which is raised. Tube about 0.75 the length of head and longer than either of the abdominal segments 7 or 8; two stout spines on ninth sternite.

Type. In Hope Collections, University Museum, Oxford.

Hab. CEYLON: Peradeniya, 1 ♂ (in association with what is probably the ♀ of the species), from pods of *Crotalaria* sp., November 1912 (*E. E. Green*, No. 3180).

Dicaiothrips greeni, sp. n.

Length 7.2 mm.

This species comes in my first division of the genus, in which the head is produced beyond the eyes for at least the length of the eye and for more than the width at the base of the produced part.

Colour dark brownish-black; fore-tibiæ yellowish-brown; intermediate tibiæ brown, lighter at both ends; hind-tibiæ light at base, and shading to yellow distally. Antennæ with joint 3 yellow, brown at apex, basal half of 4 and third of 5 shaded to a light brown.

Head nearly 3.5 times as long as broad near base, the produced part occupying about 0.25 and the eyes 0.2 the total length. Postocular bristles long, and a second pair of dorsal bristles near basal fourth as in *Anactinothrips*, Bagn.,

and *Dracothrips*, nov.* Antennæ moderately slender, fourth joint about 0·8 the length of third. Cheeks rather closely set with long and short setæ, somewhat as in *D. grandis*, Bagn.

Prothorax about 0·4 the length of head, setæ only moderately long, those at anterior angles directed forwards. Fore-femora incrassate, with numerous outer marginal setæ, including several unequal-sized longer ones, much as in *D. championi*, Bagn.; setæ light-coloured, a slender sickle-shaped brown spine at apex. Tarsal tooth long and sharp. Hind-legs very long and slender. Wings reaching to the fifth abdominal segment.

Abdomen long, segment 8 a little longer than 7. Tube slender, about 0·75 the length of the head and as long or a little longer than the seventh segment. Terminal bristles 0·8 the length and those on 9 almost as long as the tube.

Type. Hope Collections, University Museum, Oxford.

Hab. CEYLON: Peradeniya, 1 ♂ taken in association with another *Dicaiothrips* not yet determined, from decayed pods of *Phaseolus* sp. (*E. E. Green*, No. 3023). I have pleasure in naming the species in honour of its well-known discoverer, to whom I am indebted for much interesting material and information.

Genus DRACOTHRIPS, nov.

Near *Mecynothrips*, Bagn. Head widest at base, narrowing to eyes; eyes finely faceted, prominent; vertex strongly produced, produced part narrow at base and widening to seat of antennæ. Two pairs of dorsal cephalic bristles. Antennæ very long and slender. Prothorax without the long recurved prolongations seen in *Mecynothrips*, and fore-femora unarmed. Tube long.

Type. *Dracothrips ceylonicus*, sp. n.

Dracothrips ceylonicus, sp. n.

♂ (?).—Length a little over 7·0 mm.

Head broad at base, narrowing to about 0·7 that width at behind eyes; produced part not 1·5 times as long as eye, narrow at base. Antennæ very slender, about 1·4 times as long as head, joints 3–5 yellow, black at apices, 6 yellow at base; relative lengths of joints 3–5 approximately:—65:55:40. A pair of dorsal bristles in addition to the postocular pair, and three pairs of rather long genal setæ.

* It should be noted that *Dicaiothrips denticollis*, Bagnall, a Malayan form, possesses this additional pair of dorsal cephalic bristles,

Prothorax with the bristles at angles set on warts, the front pair set directly forward. Fore-femur not strongly incrassate, with a few long colourless and faintly knobbed bristles. Fore-tibiæ yellowish-red; intermediate tibiæ shaded to yellow distally and hind-tibiæ yellow at knee and distal half.

Abdomen long and slender; tube 0·9 the length of head; bristles on segment 9 about 0·6 the length of tube.

I have not yet had the opportunity of re-examining the type of *Mecynothrips simplex*, Bagn. (in the British Museum), which I think will fall into this genus. *M. simplex* has the fore-femora strongly inflated, shining, sparingly setose, and armed with a short tooth at apex within, and the tube is shorter in comparison with the length of head.

Type. In Hope Collections, University Museum, Oxford.

Hab. CEYLON: Peradeniya, two examples, almost certainly males, swept from bushes (*E. E. Green*, No. 2961). They were in association with *Ecacanthothrips sanguineus*, Bagn.

Family Megathripidæ.

Siphonothrips brevis, sp. n.

♂.—*Forma aptera*.

Length 2·1, breadth of mesothorax about 0·38 mm.

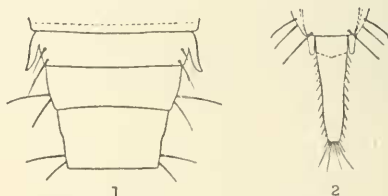
General colour dark black-brown, abdomen darker than the head and prothorax. All femora brown, the intermediate and posterior pairs light yellowish-white basally, and lighter at extreme base; all tibiæ yellow, tarsi also yellow with a dark patch on second joint. Antennæ with first two joints dark brown; second lighter apically; 3 yellow, lightly tinged with brown near apex; 4 yellow, apical fourth brown; 5 brown, with basal half yellow (6 to 8 broken off in type-specimen, 7 and 8 at least presumably totally brown).

Head 1·8 times as long as broad across eyes, 2·8 times as long as the prothorax, but only very slightly (0·08) longer than the tube. Checks very slightly incurved behind eyes and thence gently arcuate to base; a few minute genal spines. Vertex slightly produced beyond eyes, with a pair of rather long bristles, which do not reach to apex of first antennal joint. Eyes small, occupying laterally 0·2 the length of the head, finely faceted; ocelli minute. Mouth-cone reaching across prosternum, rounded at tip. Antennæ about twice as long as the head (first 5 joints = 1·5 times

the length of head); relative lengths of joints 1 to 5:—
7 : 10 : 30 : 24 : 21.

Prothorax transverse, twice as broad as long; all setæ present, slightly knobbed, those at hind angles longest, almost 0.5 as long as the prothorax. Pterothorax a little broader than long, wings absent. First pair of legs rather short and somewhat stout; simple. Intermediate also short and somewhat stout; hind pair longer and more slender, femur 1.5 times the length of intermediate femur, broadest at distal third; tibia correspondingly long.

Side of abdomen gently arched to sixth segment, which is armed with a pair of short and comparatively stout, outwardly curved lateral processes and reaching slightly beyond the apex of segment; 7 evenly narrowing apically; 8 about as broad across apex as across base, with a pair of mid-lateral tubercles faintly suggested.



Siphonothrips brevis, sp. n., ♂.

1. Abdominal segments 6 to 8.

2. Tube.

Tube broadest at basal fourth, thence sharply narrowed, and continued to basal fifth or thereabouts, with the sides practically parallel, basal fifth sharply narrowed; viewed laterally the tube is sharply curved upwards at or about the basal third, so that the distal two-thirds is on a higher level than the base. Surface sparsely furnished with moderately short and very delicate hairs. Terminal bristles weak, only about one-third the length of the tube, light-coloured. Abdominal bristles also weak, those on 7 and 8 directed outwardly.

Type. In Hope Collections, University Museum, Oxford.

Hab. One male, coll. Prof. J. Sahlberg, Narenta.

Family Phlæothripidæ.

Liothrips micrurus, sp. n.

♀.—Uniformly dark brown, including fore-tibiæ, as in *L. major*, Buffa. Antennæ with second joint yellowish distally and 3–5 lemon-yellow, 4 and 5 deepening to

brownish-yellow distally, 6-8 light brown, 6 yellowish distally. Wings clear.

Head a little more than 1.5 times as long as broad; cheeks not converging posteriorly; vertex raised in form of hump. Antennæ 1.5 times as long as head, inserted below vertex, approximate, joint 3 not as broad as 2 and 4; relative lengths:—16 : 18 : 31 : 31 : 24 : 23 : 17 : 9. Eyes occupying one-third the length of head; fore-ocellus on apex of raised vertex, directed forwards. Postocular bristles set well in towards mid-line, very short and weak. Mouth-cone long and pointed, reaching to base of prosternum.

Prothorax with anterior margin strongly emarginate, more than twice as broad across hind-angles as long through middle, but only 1.5 times as broad as long, taking the length from posterior margin to a line drawn across anterior angles. Mid-lateral setæ absent, others short, the postero-marginal ones about 0.4 the length of prothorax through middle, and those on anterior margins about 0.2 as long. Pterothorax 1.5 times as broad as the prothorax and a little longer than broad.

Abdomen no broader than pterothorax, gradually narrowing to segment 7 and thence a little more rapidly to tube. Tube very short, not one-half (0.47) the length of head and only 1.38 times as long as segment 9. Sides straight, evenly narrowed from base, where it is about 2.25 times as broad as at apex and more than 0.6 as broad as long. Bristles at tip and on segment 9 about 0.8 the length of tube, weak and colourless; two pairs of wing-retaining spines on each of the tergites 2 to 7.

Separated from *elongatus*, Bagn. (Neotropical), which has also a very short tube, by the coloration of the antennæ.

Type. In Hope Collections, University Museum, Oxford.

Hab. One ♀, Matarich, near Cairo, from *Zyziphus*, 9. ix. 1911 (*F. C. Willcocks*).

The type-specimen is cleared in potash, so that it is possible to get but an approximate idea of the coloration; the colour of the antennæ is taken from a second example captured by Prof. Sahlberg at Heluan. This example, carded, showed a pronounced metallic purplish coloration, but I do not think it was natural.

Cryptothrips tenuipilosus, sp. n.

♀.—Length 2.4 mm., breadth of mesothorax 0.52.

Colour chestnut to dark grey-brown, apical half of tube
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lighter than base; fore-tibiæ yellow with inner and outer margins brown, fore-tarsi yellow. Antennæ brown, joint 3 yellow lightly tinged with brown distally; 4 light brown with basal third and tip yellow; 5 to 8 dark brown, 5 and 6 with basal fifth or thereabouts sharply yellow.

Head 1·23 times as long as broad just behind eyes, and 1·4 times as long as the prothorax; cheeks straight; evidently slightly diverging posteriorly, sparsely and minutely setose. Eyes finely faceted, occupying nearly 0·3 the length of head; space between them about three times the breadth of one of them. Ocelli large, posterior pair above a line drawn across middle of eyes and near their inner margins; anterior one forwardly directed. Postocular bristles long and very slender. Antennæ about 1·8 times as long as the head, relative lengths of joints 3 to 8 as follows:— 24 : 25 : 24 : 19 : 18 : 14 — 3 and 4 equally broad and 5 about 0·2 narrower than either of them. Sense-cones short and stout, 2 (or more) on 3, 4 on 4, and 2 each on 5 and 6. Mouth-cone almost reaching across prosternum; basal joint of maxillary palpi longer than the distal joint.

Prothorax almost twice as broad as long; setæ very slender, those at anterior angles 0·4 and those at posterior angles 0·7 as long as the prothorax. Pterothorax large, 1·35 times as broad as prothorax and but slightly longer than broad. Fore and intermediate legs rather short, hind pair moderately long. Fore-femora slightly incrassate, tarsus unarmed. Wings reaching to about eighth abdominal segment, apparently slightly narrowed medianly; cilia dark.

Abdomen a little broader than pterothorax, gradually narrowing from segment 3 to 7, and thence more roundly and rapidly to base of tube. Tube 0·65 as long as the head, terminal hairs very slender, colourless distally, and about as long as the tube. Those on 9 exceptionally slender and also about as long as the tube; lateral bristles on 4–8 long, slender, colourless.

Type. In Hope Collections, University Museum, Oxford.

Hab. Corfu, 1 ♀ collected by Prof. J. Sahlberg, to whom I am indebted for a small but interesting collection, including the types of *Siphonothrips brevis* and the species here described.

Recognized by its short head, structure and coloration of antennæ, coloration of legs, and the unusually slender postocular, prothoracic, and terminal abdominal bristles.

Cryptothrips insularis, sp. n.

Length about 2·25, breadth of mesothorax 0·38 mm.

Near *C. dentipes*, Reut. Colour almost black; legs dark brown, tibiæ somewhat lighter apically; tarsi yellowish-brown. Antennæ concolorous with head, joint 3 yellow, dark brown near apex.

Form linear, apterous.

Head as in *dentipes*, about 1·25 times as long as broad behind eyes and about twice as long as the prothorax. Eyes small, occupying 0·25 the length of head, moderately finely faceted. Ocelli small, posterior pair widely separated and touching inner margins of eyes. Antennæ 1·75 times the length of head, intermediate joints not elongated as in *dentipes*, 3-5 approximately subequal and but slightly longer than 6.

Prothorax transverse, about 1·8 times as broad as long; two foveæ, one above the other, near each lateral margin. Pterothorax only a little broader than the width across fore-coxæ, transverse. Legs somewhat short.

Abdomen elongated, linear, a little broader than the pterothorax; segments 8-9 sharply narrowing to base of tube. Tube short, stout, 0·6 the length of head. Setae indeterminable in the carded specimen.

Type. In the British Museum of Natural History.

Hab. Canary Isles (*T. V. Wollaston*).

The shape of the head is almost exactly as in *C. dentipes*, but not quite so broad. From this species it is readily separated by its linear form, the short antennæ (twice as long as the head in *dentipes*) and short intermediate joints, the darker fore-tibiæ, shorter legs, and the short tube, which in *dentipes* is as long as the head.

Genus MICROCANTHOTHIRIPS, nov.

For some time I have been aware that my *Cephalothrips spinosus* could not be retained in that genus. A very strong artificial light enables one to examine the femora tucked up under the head through the dark chitin, and I have thus drawn up the following brief diagnosis, which is sufficient to characterise the genus for the time being. If further specimens do not come to hand, I propose to carefully remount the unique preparation.

It cannot be referred to any of the known genera with armed fore-femora, and would seem to come in the *Haplorthrips* group.

Head only slightly longer than broad; eyes small; mouth-cone rounded and reaching almost across prosternum. Antennæ not quite twice as long as head, unusually massive; joint 7 constricted at base with a short stem, joined broadly to 8; 3 longer than any of the others. Fore-femur with a

Fig. 3.



Microcanthothrips spinosus (Bagnall). Outline of fore-femur.

long sharp process at middle within; tibia stout; tarsal tooth small. Abdominal segments 4-7 at least with a stout spine-like seta (in addition to a long stout bristle) at each posterior angle and a short but similar postero-marginal spine within.

Type. *Cephalothrips spinosus*, Bagn.

SYNONYMICAL NOTES.

Limothrips angulicornis, Jablonowski.

1894. *Limothrips angulicornis*, Jablonowski, Természetráji Füzetek. xvii., Budapest, pp. 44-47, pl. iii.
 1912. *Limothrips setarica*, Jones, Tech. Ser. 23, Bur. Ent., U.S. Dept. Agric. pp. 8-10, pl. iii.

When Mr. Jones described his *L. setarica* I thought it would probably be the same as the species described by Dr. Jablonowski eighteen years previously from Armenia and Hungary, but it seems to be a rare species and I had not then seen examples. I have now before me several females and one male of a *Limothrips* collected by Dr. Anton Krausse, at Sorgono, Sardinia, in 1913, which agree in every detail with Jones's description and figures, though darker in colour, and which I have little doubt are referable to *Limothrips angulicornis*. Dr. Jablonowski does not figure the stout terminal spines, nor does his figure of the chaetotaxy of the fore-wing agree, but we see exactly similar discrepancies in his figures of *Limothrips cerealium* (*op. cit.* xvii. 1894, pts. 3 & 4, pl. iv.) appearing in a later part of the same publication.

Dendrothrips ornatus (Jablonowski).

1894. *Thrips ornata*, Jablonowski, Termesz. Füzetek. xvii., Budapest, pp. 93-99, pl. iv.

1895. *Dendrothrips tiliae*, Uzel, Monogr. der Ordnung Thysanoptera, pp. 160-162, pl. ii. fig. 15, and pl. vi. figs. 84-86.

Jablonowski's memoir was evidently issued whilst Uzel's work was in the press, and is not noticed in the latter author's bibliographical notes.

Baliothrips dispar, Haliday.

1911. *Bagnallia agnessæ*, Bagnall, Journ. Econ. Biol. vi. p. 7, and in later papers.

The maxillary palpus of *agnessæ* is undoubtedly 2-segmented, thus bringing the species into the genus *Baliothrips*, and I think there is no doubt that it should be referred to *B. dispar*, though my examples are much larger than described by Uzel. Having overlooked its generic position, this accounts for my previous inability to recognize this not uncommon species, *B. dispar*, in Britain.

I am indebted to Mr. Douglas Hood, who detected the synonymy in working out the North-American species, for bringing this to my notice.

Genus SCOLOTHRIPS, Hinds.

1902. *Scolothrips*, Hinds, Proc. U.S. National Mus. xxvi. p. 157.

1910. *Chaetothrips*, Schille, Acad. Litt. Cracov. xlv. p. 5 (*separatim*).

XXXII.—Notes on *Varanosaurus acutirostris*, Broili. By D. M. S. WATSON, M.Sc., Lecturer on Vertebrate Palæontology, University College, London.

ONE of the greatest treasures of the Palæontological Museum in Munich is the imperfect skeleton which forms the type specimen of *Varanosaurus acutirostris*, Broili.

Although Prof. Broili's description is both accurate and excellent, the great additions to our knowledge of the skull-structure of early types which have been made during the last ten years allow of a more critical examination of the specimen, which I am enabled to offer owing to the great kindness of Prof. Broili, through whose friendship I have been able to examine the whole of the valuable series of Permian reptiles belonging to the Alte Akademie at Munich.

Amongst some undetermined fragments belonging to the specimen, I was fortunate enough to recognize both articular